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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,908	02/25/2005	Hirofumi Nakajima	3883.024	9997

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EXAMINER	
LAO, LUN S	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/525,908

Applicant(s)

NAKAJIMA ET AL.

Examiner

Lun-See Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed 05-17-2007. Claim 1 has been amended. Claims 1-8 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama (US 2002/0181721) in view of Prohs (US PAT 4,496,022).

Consider claim 1, Sugiyama teaches a sound-source search system comprising:

a plurality of microphones (see fig. 7 (M1-M5)) that are arranged on the surface of said baffle for picking up sound in all directions; (see fig. 7 (M1-M5));

an amp that amplifies (13) analog signals, which are electrical signals for the sounds in all directions that were picked up by said plurality of microphones (M1-M5);

an A/D converter (14) that converts the analog signals that were amplified (13) by said amp to digital signals;

an arithmetic-processing apparatus (20) that performs arithmetic processing on the digital signals that were converted by said A/D converter (14), and analyzes the direction from which the sound from the sound source comes, and/or estimates the intensity of the sound from the sound source;

a memory apparatus (22) for storing the results of the arithmetic processing by said arithmetic-processing apparatus;

a display apparatus (23) that displays (see fig.9) the intensity distribution of the sound from the sound source based on the results of the arithmetic processing by said arithmetic-processing apparatus (20 and see page 2 [0064]-[0078]); and

an input apparatus (10 (M1-M5), 11, 12 (GPS)) for entering the distance to the sound source (see figs. 8-9), or sound sources (such as, pick up the sound signal by M1-M5) generated at a plurality of sites on boundary surfaces (see page 3 [0036]-[0049]); and wherein

said arithmetic-processing apparatus (20), by arithmetic processing, finds the amplitude characteristics (level of sound pressure, [0078]) and phase characteristics of each of the acoustic signals picked up by said plurality of microphones (M1-M5), after which it combines that signal information with analysis information for the sound field around said baffle (see fig.4), and together with performing arithmetic processing (20) to emphasize the sound coming from a specific direction for all directions, and identifying the direction from which the sound comes, it estimates the intensity of the sound from the sound source or sound sources generated at one or more of sites on boundary surfaces (sound signal picked up the by M1-M5) based on the arithmetic-processing

results and distances input from said input apparatus (see (10 (M1-M5), 11, 12 (GPS)) in fig. 9 and figs 3-6 and see page 5 [0077]-page 6 [0081]).

As to the amended limitation that the microphone cable is installed in an inside of said baffle, this would have been an obvious choice for the purpose of safety (less tangling as the microphones rotate).

Sugiyama does not clearly teach a spherical, semi-spherical or polyhedral baffle; and microphone cable of the microphones being installed in an inside of said baffle.

However, Prohs teaches a spherical, semi-spherical or polyhedral baffle (see fig.2 and abstract).

Therefore, it have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Prohs into Sugiyama to more accurately locate the sound source.

On the other hand, Sugiyama teaches the sound source probing system, but Sugiyama does not limit his microphone cable to be install in an inside of the baffle or out side of the baffle. These microphone's cable installation is well known in the art (office notice is taken).

Therefore, it have been obvious that the sound source probing system as taught by Sugiyama could have installed the microphone cable inside of the baffle so that the microphone's cable in a single portion and the microphone cable won't be angling.

Consider claim 2, Sugiyama teaches the sound-source-search system comprising one or more directive or non-directive sound-source elements that generate sound waves (see fig.4) and that are arranged on the surface of said baffle; wherein said

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arithmetic-processing apparatus (see fig.7, (20)), by arithmetic processing, finds the amplitude characteristics (13) and phase characteristics (20) of each of the reflected sounds that are picked up by said plurality of microphones (M1-M5), after which it combines that signal information (13) with analysis information for the sound field around said baffle (20), and together with performing arithmetic processing to emphasize the sound coming from a specific direction for all directions, and identifying the direction from which the reflected sound comes, automatically measures the distance from the baffle to the sound source (see fig.9) or sound sources generated at one or more sites on boundary surfaces by using the time difference from when the test sound was generated to when the reflected sound was picked up; and uses that value as information for estimating the intensity of the sound from the sound source or sound sources generated at one or more sites on boundary surfaces, and/or estimating the intensity of the sound reflected from that area (see fig.9 and page 5 [0077]-page 6 [0081]).

Consider claim 3, Sugiyama teaches the sound-source-search system further comprising one or more light-receiving elements (see fig.7 (11, camera)) that are arranged on the surface of said baffle such that the imaging ranges overlap; and wherein said arithmetic-processing apparatus (20) takes in the image from said one or more light-receiving elements (11) that corresponds to the direction from which said specific sound comes, and combines and displays the image of the arrival direction and/or intensity of the sound distribution found through said

arithmetic processing with that image or the result of image processing based on that image (see figs. 7-9 and see page 5 [0064]-[0076]).

Allowable Subject Matter

4. Claims 4-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed on 05-16-2007 have been fully considered but they are not persuasive.

As to the amended limitation of claim 1 that the microphone cable is installed in an inside of said baffle, this would have been an obvious choice for the purpose of safety (less tangling as the microphones of Sugiyama rotate).

Applicant argued that the input apparatus which enters the distance to a sound source is not disclosed by Sugiyama (Remarks, page 7 3rd paragraph).

The examiner respectfully disagrees. Sugiyama teaches that an input apparatus (10 (M1-M5), 11, 12 (GPS)) for entering the distance to the sound source (see figs. 8-9), or sound sources (such as, pick up the sound signal by M1-M5) generated at a plurality of sites on boundary surfaces (see [0036]-[0049]). It meets the limitation as recited in claim 1.

Applicant further argued that Sugiyama does not disclose "the arithmetic processing apparatus, by arithmetic processing, finds the amplitude, characteristics and phase characteristics of each of the acoustic signals picked up by the plurality of microphones, after which it combines that signal information with analysis information for the sound field around said barfly, and together with performing arithmetic processing to emphasize the sound coming from a specific direction for all directions, and identifying the direction from which the sound comes, it estimates the intensity of the sound from the sound source or sound sources generated at one or more of sites on boundary surfaces based on the arithmetic-processing results and distances input from the input apparatus" (see the remark page 7 last paragraph and remark page 8 first paragraph).

The examiner respectfully disagrees. Applicant did not provide any specific analysis as to why the portions of Sugiyama cited by the examiner do not support the examiner's position. Therefore, the argument is not persuasive. As discussed in the body of the rejection, Sugiyama discloses that the arithmetic-processing apparatus (20 in fig.9), by arithmetic processing, finds the amplitude characteristics (level of sound pressure, [0078]) and phase characteristics of each of the acoustic signals picked up by said plurality of microphones (M1-M5), after which it combines that signal information with analysis information for the sound field around said baffle (see fig.4), and together with performing arithmetic processing (20) to emphasize the sound coming from a specific direction for all directions, and identifying the direction from which the sound comes, it estimates the intensity of the sound from the sound source or sound sources(such as,

pick up the sound signal by M1-M5) generated at one or more of sites on boundary surfaces based on the arithmetic-processing results and distances input from said input apparatus (see (10 (M1-M5), 11, 12 (GPS)) in fig.9 and figs 3-6 and see page 5 [0077]-page 6 [0081]). Thus Sugiyama meets the limitation as recited in claim 1.

Regarding the argued various effects which the cited reference do not have (Remarks, page 8-11), these effects are not claimed. See claims 1-3. The argument is thus moot.

Therefore, applicant's arguments are not persuasive.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Miyatake (US PAT. 4,776,019) is cited to show other related sound source search system.

8. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See *L.S.*
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501

Date 08-02-2007



VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600